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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/996,176	11/27/2001	Evan R. Green	42390P10393	2243

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EXAMINER

WILLIAMS, HOWARD L

ART UNIT	PAPER NUMBER
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2819

DATE MAILED: 11/01/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/996,176

Applicant(s)

Green

Examiner

Howard L. Williams

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE three MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other: ____

A shortened statutory period for reply to this action is set to expire THREE MONTHS from the mailing date of this action. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

The use of the trademark Bluetooth has been noted in this application. It should be capitalized wherever it appears and be accompanied by the generic terminology, perhaps the IEEE standard number.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Misnumbered claim 15-20 have been renumbered 16-21. As filed, the application contained two claims numbered as 15; the previous sentence is in reference to second one of these claims.

The disclosure is objected to because of the following informalities: The last clause of claim 13 regarding the subtractor seems to misstate its operation since the output of the subtractor would seem to be already injected in the receive path. Appropriate correction is required.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
(e) the invention was described in-
(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claim 1 is rejected under 35 U.S.C. 102(b) as clearly anticipated by Smith (US 5,444,864).

Claims 1-3 are rejected under 35 U.S.C. 102(e) and anticipated by Druilhe (US 6,452,967 B1). These claims do not distinguish over common echo cancellation techniques.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith (US 5,444,864) in view of Kenworthy (US 5,691,978).

Smith discloses a system for active cancellation of interference in RF systems. Smith notes that it is well known to arrange RF system to either make

use of the same antenna or separate transmit and receive antennas in close proximity to each other. (col. 1 lines 16-23). The Smith interference cancellation arrangement samples a portion of the transmit signal (28; fig. 1) and receive signal 32 and supplies each of these signals to signal processing circuit (12; fig. 1) to provide a gain and phase matched signal to the coupled or leak-through interference signal. The gain and phase matched signal (36; fig. 1) is fed to one input of a subtraction circuit to substantially cancel the interference signal in the receive path. Smith does not disclose analog-to-digital converters in the transmit path nor digital-to-analog converters in the receive path with digital signals being the signals being the input the adaptive cancellation circuit.

Kenworthy discloses an RF communication systems which uses antenna positioning, RF cancellation and adaptive cancellation at the baseband frequency to mitigate coupled and reflected interference from the desired RF signal of interest in the receive path. The adaptive baseband cancellation taps digital signals from the transmit path (fig. 3) —the converters are noted as optional or if necessary -- for gain and phase matching a portion of the transmit signal in a processing circuit (43; fig. 3) for coupled and reflected interference cancellation in the receive path. The optional and if necessary nature of the converters for the cancellation signal and receive path further demonstrate that digital transceiver circuitry is known and the use of digital processing for its respective benefits over analog processing are well known and would have been obvious.

Smith and Kenworthy do not disclose their RF system as including IEEE 802.11(b) or 815.1 "Bluetooth" standards transmission. However, the application of known interference cancellation to relatively new RF spectrum that does nothing to change the technique would have been obvious to one of skill in the art because the issue of cross coupling in systems having co-located antennas would still exist.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Schacherbauer et al. in the article entitled a Flexible

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Multiband Frontend for Software Radios using High IF and Active Interference Cancellation discloses using a low power auxiliary transmitter to replicate the transmission signal coupled into the receive path. Tahara (US 4,857,858) discloses active cancellation in digital radio transmission incorporating orthogonally positioned channels.

Any inquiry concerning this communication should be directed to Howard L. Williams at telephone number 703-308-1679.

30 October 2002



Howard L. Williams

Primary Examiner

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